PITTSBURGH
PLATE GLASS COMPANY

GENERAL OFFICES · GRANT BUILDING · PITTSBURGH · PA.

July 2, 1935

*To the Stockholders:*

For many years, the Pittsburgh Plate Glass Company did not manufacture the window glass sold by its warehouses but confined its activities to the making of plate glass in its several forms. It was the practice to supply our warehouses with window glass made by many different concerns which necessitated carrying a mixed stock in which the quality of the glass varied considerably. Frequently a warehouse, in filling a large order for window glass, would be forced to include three or four different brands. This was unsatisfactory both to ourselves and to our customer.

After years of painstaking research, our engineers developed a new process of making flat drawn window glass known as the Pennvernon Process. Factories were equipped to produce glass by this new method and the warehouses were rapidly stocked for the first time with a branded window glass manufactured by the Pittsburgh Plate Glass Company. This was five years ago and the reception by the trade of Pennvernon Window Glass was beyond our expectations. Our customers then knew that when they ordered window glass, it would all be of the same high quality and that they could depend on any future orders being similarly filled. Our sales force took new interest in pushing this new line because they were selling quality while previously they were selling only a commodity.

In addition to our regular sales activities, Pennvernon Window Glass is being aggressively publicized by a national advertising campaign and by a large group of promotional men contacting all users of window glass. It is expected that the popularity of this member of our glass family will continue to grow and Pennvernon will always be a credit to the Company.

H. S. WHERRETT, *President*

# PENNVERNON WINDOW GLASS

In almost all historical discussions of Glass, there is to be noted a failure to distinguish clearly between two well defined periods—the one extending through many ages when men used Glass chiefly for ornament and in art; and the other more significant period when Glass had come to be recognized as a utility capable of radically changing the conditions of human life. Yet it was this transition from one epoch to the other that marks one of the important stages in the progress of civilization.

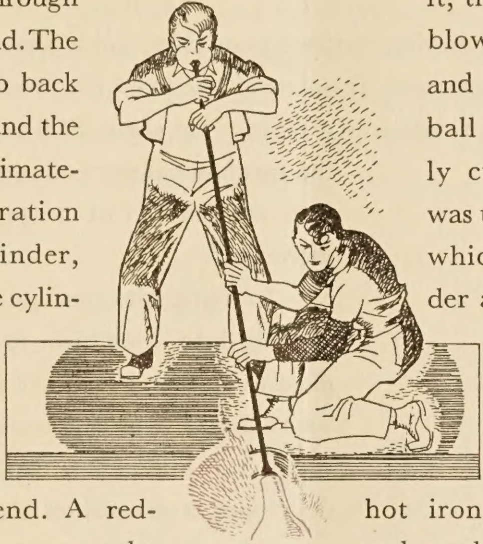
Passing over the scant record of attempts to use Glass for windows, in ancient Rome, it may be said with confidence that civilized Europe knew nothing of window glass as a real utility until within a comparatively recent period.

About the time Columbus made his voyages of discovery, manufacturers had succeeded in producing a reasonably good glass at a cost not utterly prohibitive. Glass was not cheap as cheapness was measured by prevailing values; it was not made on a large scale or in great quantities; it was not good according to the standards of today. But production had reached the point where Glass had compelled recognition as a very necessary utility. The first colonists who undertook to make a settlement in Virginia had been educated to the need for window glass, but the transportation facilities of the time probably did not encourage its carriage as shipped cargo, for they brought with them "eight Poles and Germans to make pitch, tar, glass and soap ashes". Somewhere in the Virginia forest, about a mile from Jamestown, a glass-house actually was erected. This fixes the date of the first glass making in America at 1608 or 1609, and it is not unlikely that this enterprise merits the distinction of being the original manufacturing industry in the English colonies of America and hence, of the United States.

This early attempt at glass-making did not long survive. Tobacco raising about that time seemed to engross the attention of the colonists to the apparent exclusion of everything else, for in a report of 1617, the "decay" of the glass works is reported. From then until 1739, the attempts to found glass-making establishments were so numerous that any narrative would be merely a long statistical array, with little cheerfulness, for practically all failed. However, recent historical research has established rather conclusively that the first commercially successful glass factory in the United States was the one established near Salem, in southern New Jersey, by Caspar Wistar in 1739. All indications point to the fact that the Wistarburg Glass Works continued in operation without any appreciable interruption until about the year 1780. Following the closing of the Wistarburg Plant, the history of glass production in this country is once more a rather dismal record of disheartening failures.

Many of us remember the window glass made by old-fashioned methods. Buildings are still standing glazed with wavy, distorting glass. It had many mechanical defects and was invariably bowed, but it was the best available window glass, and polished plate glass was too expensive for the average person.

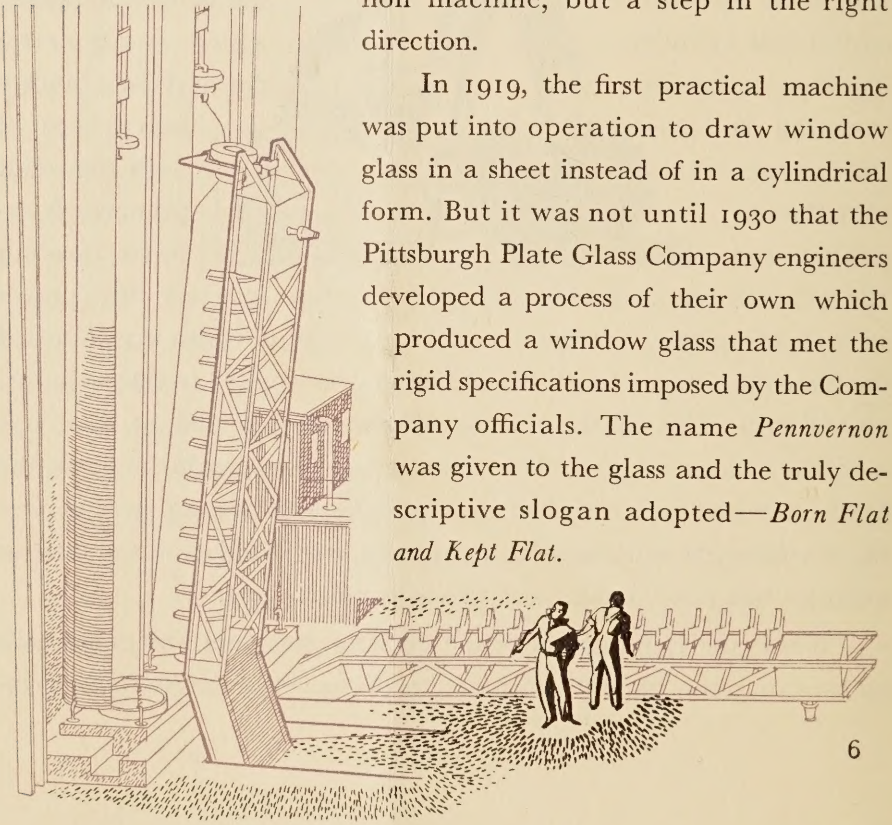
In those days, the furnaces in which the ingredients were reduced to the molten state were only a few feet square and the melting pots were about the size of water buckets. Window glass was practically the result of the labors of one man—the blower. He would dip his blow pipe into the pot of molten glass until a large ball of glass on the "gather" had become affixed to the pipe. Then by slowly revolving the pipe and at the same time blowing through it, this gather would gradually expand. The blower would swing this hollow bulb back and forth, blowing at the same time, and the ball would elongate into an approximately cylindrical form. The next operation was to open the lower end of this cylinder, which was done by blowing into the cylinder and then quickly inserting it into the heat of the furnace with the result that the imprisoned air expanded and burst through the softened end. A red-hot iron was then drawn around the glass, near the end to which was attached the blow-pipe, and a touch of cold water was applied to this same reheated strip. This cut the cylinder off from the pipe and the result was a hollow cylinder of glass. This cylinder was split lengthwise down the center, inserted into the oven until pliable, and then an attempt was made to flatten it out. There is little wonder that this glass was of inferior quality—was wavy, bowed and showed surface burns.



It was the introduction of the cylinder machines and continuous tanks in 1905, that greatly contributed to the success of the American Window Glass industry. These cylinder machines aided the production of window glass, although the quality was little improved. These machines practically duplicated the older methods of manual blowing, the only difference being the fact that compressed air was used and the glass in cylindrical form was drawn mechanically to a height of thirty to forty feet by the machines. The processes of splitting the cylinder and flattening it were practically the same.

These machines still produced poor glass, but it was a natural step in the refinement of processes. It was a definite move toward the development of machines to draw window glass in a flat sheet. Still far removed from the mechanical perfection of the Pennvernon machine, but a step in the right direction.

In 1919, the first practical machine was put into operation to draw window glass in a sheet instead of in a cylindrical form. But it was not until 1930 that the Pittsburgh Plate Glass Company engineers developed a process of their own which produced a window glass that met the rigid specifications imposed by the Company officials. The name *Pennvernon* was given to the glass and the truly descriptive slogan adopted—*Born Flat and Kept Flat.*



Plants, using the Pennvernon patented process exclusively, were built at Mount Vernon, Ohio; Clarksburg, West Virginia; and Henryetta, Oklahoma. These plants are the result of the Pittsburgh Plate Glass Company's staff of executives, engineers and production men. The experience of years and familiarity with the best processes in window glass production as well as a determination to improve on these processes are reflected in the design of these three plants. The Company's engineers not only designed the manufacturing operations, but also assisted in the designing of the buildings themselves. Needless to say, these buildings are of the most modern type, absolutely fireproof, and scientifically designed to give the maximum of light and ventilation to each department. Every operation leads direct-

ly towards its objective—the finished product—without backtracking or waste motion.

The principal difference between the Pennvernon process and any other process is that the glass drawn by the Pennvernon method is drawn upward in a flat sheet from the surface of the molten glass and there is no bending of the glass; it remains always flat and even. Its surface is untouched by any objects from the time it is drawn from the tank until it has cooled sufficiently to be impervious to retaining marks on its surface. The glass is drawn directly from the furnace bath and its base is held straight and kept from shifting position by a draw-bar submerged below the surface of the glass. By this method, Pennvernon is formed from the surface of the molten glass and is not drawn through the slot of a debituse. Thus, Pennvernon is not lined or scratched by being drawn through the debituse nor are its surfaces marred by being bent over rollers. Pennvernon leaves the tank in a flat sheet; it is drawn vertically, cooled and cut off three floors above the tank—still in a flat sheet, with no lehr burns, no bowed sides and no lines.

Although the Pittsburgh Plate Glass Company is now producing a window glass of the highest quality, it has not ceased in its efforts to improve Pennvernon and expand its many uses.

The building industry will undoubtedly soon show signs of life. People are just beginning to realize that their most valued possession is the home. Its value may fluctuate on the open market, but that is of little importance if the property is clear. After the period of depression has run itself out, real estate values have never failed to exceed the previous peak of prosperous times. As incomes increase, there will be the need of making secure investments, and there is no investment offering greater security and peace of mind than a home.

In a recent competition for home design sponsored by one of the country's largest manufacturers of electric equipment, over two thousand plans were submitted by the leading architects of the country. This was the largest and finest collection of home designs ever assembled. Of the total number of plans submitted, one hundred received awards or mention.

The unusually large number of windows in these homes is encouraging. The modern trend is toward more sunlight in the home and, naturally, this means more windows. The homes of the future will have many windows; many homes will have entire walls of glass windows stretching from the ground floor up to and including the second floor; some will have windows of sliding glass; the trend toward glass-enclosed solariums on the roof is quite definite.

The plants of this Company devoted to the manufacture of Pennvernon are prepared to supply the expected increased demand. Their total production capacity is in excess of 180,000,000 square feet, or nearly 75% of the total footage of window glass consumed in 1933. Pennvernon—the country's leading window glass—another product of quality for which the Pittsburgh Plate Glass Company is justly famous.

# PENNVERNON WINDOW GLASS

## *Essential Facts*

### GENERAL INFORMATION

Pennvernon Window Glass is manufactured by a new patented process. The manufacturing is supervised by the same organization which has made other products of the Pittsburgh Plate Glass Company standard throughout the country.

Pennvernon Window Glass is a perfectly flat window glass with a brilliant, fire polish on *both* sides. Special methods of treating this product prevent staining or loss of luster. Purity of raw materials and meticulous care in manufacture give to Pennvernon a permanent clearness. A close examination of this glass shows a smooth, dense surface structure which resists wear and abrasion and gives long-lasting beauty. Due to the perfect flatness of this window glass, beauty of reflection is enhanced, transparency increased and distortion minimized. Also, either side may be glazed out, breakage is reduced to a minimum and time is saved in the glazing operation.

Thickness: Tolerances in thickness of Single and Double will be as per the U. S. Government Standards; 10.5 to 11.5 lights to the inch for Single and 7.5 to 8.6 lights to the inch for Double.

Pennvernon Heavy Sheet: Pennvernon Heavy Sheet is produced in thicknesses of 3/16″ and 7/32″.

### QUALITIES

*U. S. Government Standards Apply Throughout*

A.A.—The best quality obtainable in Window Glass. Higher than is commercially necessary; manufactured only to special order and priced accordingly.

A.—The highest grade for special commercial uses. Contains no defects to perceptibly interfere with straight vision.

### QUALITIES *Cont.*

B.—Glass free from noticeable defects—but containing imperfections which prevent its being graded as "A.A." quality or "A" quality.

Heavy Sheet—Recommended for use where large sizes of Window Glass are required.

Graded—Select—Same quality as "A" above.

Factory Run—Same quality as "B" above.

Steel Sash—Specially selected for the requirements of industrial and factory buildings. Defects so located as not to obstruct light transmission. Available in sizes 14x20 and 12x18 only.

Greenhouse—A special quality selected to eliminate defects injurious to growing plants. Available in sizes 16x18, 16x24, and 18x20 only.

Picture Glass—Pennvernon Picture Glass or 16 ounce is a very thin glass for picture framing.

### PACKING

Pennvernon Window Glass is packed in a distinctive, efficient, light-weight crate, which thoroughly protects the glass from breakage in shipment and by the use of a special asphalt liner in the corrugated carton, from moisture. A new type of separator paper placed between each light of glass in the carton prevents formation of stain. Cleanliness is assured by the non-use of straw and the fire hazard is reduced. With the new crate, carton and separator paper the glass comes out on the job as spotless as when it left the Pennvernon machine at the factory.

Pennvernon is shipped in ordinary sizes in crates of 50 square feet. Large sizes (over 100 united inches) are packed in crates containing 100 square feet.

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